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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/825,416

04/03/2001

Ralph S. Shoberg

RST-007-B

2653

7590

11/21/2003

ATTN: Thomas E. Bejin  
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EXAMINER

COMPTON, ERIC B

ART UNIT

PAPER NUMBER

3726

DATE MAILED: 11/21/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/825,416

Applicant(s)

SHOBERG, RALPH S. *CH*

Examiner

Eric B. Compton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 18-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 30, 2003 has been entered.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: keyboard (14). See page 6, [0027]. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 18 and 21 rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,106,176 to Rice et al.

Rice et al disclose a method for auditing tension in a threaded fastener comprising:

- a) providing a installed threaded fastener (e.g., a bolt);
- b) applying a torque to the threaded fastener with a wrench (1) until a torque is reached such that the fastener rotated;
- c) measuring the torque values applied to the fastener with a torque transducer (6) and the angle the fastener rotates with an angle transducer (5) to determine a breakaway point (B) and determining the rate of change of torque per unit of rotation (module 14);
- d) creating a plot of the measure torque values versus the measured angle values (see Figure 1).
- e) extending a tangent from the torque versus angle plot at a point (B), or predetermined torque (see col 7, lines 11-13) where the fastener was rotating to the angle axis and defining the point (G) at which the tangent crosses the angle axis to be zero degrees (see Figure 1, curve II);
- f) scaling the angle axis from the zero degree point based on the actual rotation of the fastener and measuring the angle of rotation from the zero degree point to the angle corresponding to the torque necessary to rotate the fastener ( $\Delta\Phi$ ); and
- g) comparing the measured angle against a predetermined angle (module 26).

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Regarding claim 18, Rice et al disclose "The preset amount of total rotation is determined for ***each fastener joint combination*** based on either joint experience or the theoretical or experimental determination ... " Col 6., lines 9-12 (emphasis added). Likewise, they disclose that for a given fastener, the same sort of relationship between tension and rotation is observed. Col. 6, lines 30+. Thus, they inherently disclose that the system is used with a plurality of fasteners. The method above would be repeated with each given fastener. Furthermore, it is inherent that an operator is keeping track of fasteners being torqued to make sure that the properly tensioned, by comparing them either individually or with a predetermined value.

Regarding claim 21, the predetermined angle is a design parameter determined based upon joint experiences (see col 6, lines 9-16).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 18-21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al.

Rice et al disclose the invention cited above. However, they do not expressly disclose tensioning a plurality of threaded fasteners (3 or more) or specify the amount of rotation applied.

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Regarding claim 18, Rice et al disclose "The preset amount of total rotation is determined for **each fastener joint combination** based on either joint experience or the theoretical or experimental determination ... " Col 6., lines 9-12 (emphasis added). Likewise, they disclose that for a given fastener, the same sort of relationship between tension and rotation is observed. Col. 6, lines 30+ Thus, they inherently disclose that the system is used with a plurality of fasteners. The method above would be repeated with each given fastener. Furthermore, it is inherent that an operator is keeping track of fasteners being torqued to make sure that the properly tensioned, by comparing them either individually or with a predetermined value. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have compared the audit values of a group of fasteners in an assembly using the method of Rice et al, in order to make sure all the fasteners in an assembly are all properly torqued.

Regarding claim 19, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied torque for a rotation from 1-15 degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 20, Official Notice is taken that assemblies comprising a plurality (3 or more) of threaded fasteners are known; for example in mounting an engine in an automobile. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have audited the applied torque to a plurality of

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fasteners in assembly using the method of Rice et al, in light of the Official Notice taken, in order to ensure that all the threaded fasteners in an assembly are properly tightened.

Regarding claim 21, the predetermined angle is a design parameter determined based upon joint experiences (see col 6, lines 9-16).

7. Claims 18-21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al in view of U.S. Patent 4,179, 786 to Eshghy.

Rice et al disclose the invention cited above. However, they do not expressly disclose tensioning a plurality of threaded fasteners or specify the amount of rotation applied.

Eshghy discloses a method of tensioning controlling of threaded fasteners similar to both Rice et al and Applicant. Furthermore, the reference notes that the output can be a printed readout of certain values such as the tension for the operator to view. Cols. 55-56, lines 63-20. Data for a number of fasteners can be printed out as shown in Table II, see Col. 57-58. The data can be used to compare the values for each joint to identify and reject low-tension fasteners, ensure proper tightening, as well as provide for quality control procedures. Col. 57, lines 15-23.

Regarding claim 18, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have audited the applied torque to a plurality of fasteners in assembly using the method of Rice et al and compared audit values, in light of the teachings of Eshghy, in order to quality control of the joints.

Regarding claim 19, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied torque for a rotation from 1-

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15 degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 20, Official Notice is taken that assemblies comprising a plurality (3 or more) of threaded fasteners are known; for example in mounting an engine in an automobile. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have audited the applied torque to a plurality of fasteners in assembly using the method of Rice et al, in light of the Official Notice taken, in order to ensure that all the threaded fasteners in an assembly are properly tightened.

Regarding claim 21, the predetermined angle is a design parameter determined based upon joint experiences (see Rice et al, col 6, lines 9-16).

### ***Response to Amendment***

8. The declaration of Eugene Rice under 37 CFR 1.132 filed October 30, 2003, is insufficient to overcome the rejection of claims 18-21 based upon the rejections as set forth in the last Office action because.

Rice states, "The claimed method involves applying a torque in a tightening direction to ***previously installed fasteners*** together with measuring torque values and angles of rotation to determine comparative clamp loads between fasteners."

Declaration, statement 3 (emphasis added).



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This would seem consistent with Applicant's summary of the invention, "The present invention provides a method and apparatus for auditing a tension value in an installed threaded fastener." Specification, page 3, [0012].

However, a further reading of the Specification reveals that Applicant's invention is in fact substantially identical to Rice's invention.

The method includes applying a torque to a threaded fastener until a torque is reached to rotate the fastener. The torque applied to the fastener is measured as well as the angle through which the fastener rotated. These values are plotted against one another such that the torque values are plotted on a torque axis and the angle values are plotted on an angle axis. A tangent is extended from the plot at a point where the fastener began rotating towards the angle axis. The point at which the tangent line crosses the angle axis is defined to be zero degrees and the angle axis is then scaled based upon the known angle of rotation. The angle from zero degree point to the angle corresponding to the torque necessary to rotate the fastener is directly proportional to the tension or preload in the fastener.

*Id.* "The process of tightening a fastener involves turning the lead screw and torque so that tension is produced in the fastener." *Id.* at [0021]. This condition is seen in Figure 2 of Applicant, "The rundown zone is the prevailing torque zone **before the fastener head or nut contacts the bearing surface.**" *Id.* (emphasis added). Thus, like Rice, the fastener is initially in an untightened state (i.e., no contact between fastener and contact surface and no prevailing torque prior to auditing). Tightening continues into the "Elastic Clamping" Region as is audited. Compare Abstract & Figures 1, Curve II, of Rice with Figure 3 of Applicant. Therefore, it appears Rice has mischaracterized Applicant's invention, since Applicant's method begins with an uninstalled fastener just like Rice.

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Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Applicant does disclose an embodiment in which a previously installed fastener is untightened. See Specification, [0029] & [0034] (providing a release audit to loosen a bolted fastener). Perhaps, this is the method that Rice believes distinguishes from the Rice reference. See Declaration, statements 4-5. An example of the embodiment is shown in Figure 2, page 884 of the Shoberg reference. Exhibit C (showing torque is decreased, which results in untightening the fastener). Claim 18, second and sixth limitations, requires "**applying a torque in a tightening direction ...**" (emphasis added). Yet, in this embodiment the torque is applied in the untightening direction not a tightening direction as required by claim 18. Therefore, the claim language expressly precludes this embodiment. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

9. The declaration of Ralph Shoberg under 37 CFR 1.132 filed October 30, 2003, is insufficient to overcome the rejection of claims 18-21 based upon the rejections as set forth in the last Office action because.

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Shoberg contends that prior to his invention, only torque v. time and torque v. angles signatures were commonly used in the art to audit tension in threaded fasteners. Declaration, statement 3. However, the same problem was also recognized by Rice, who discussed the drawbacks of "turn of the nut methods" (torque v. angle). Rice, Col. 1, lines 16+.

Shoberg further contends that his invention does not rely on the "nut factor" for auditing clamp load measurements, as previously used in the art. Declaration, statement 5. Like Applicant, Rice does not rely on a "nut factor" for auditing clamp load measurements either, but instead relies on determining the zero-angle point and measuring the angle of rotation from the zero-angle point. See Rice Abstract & Figure 1, Curve II. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, supra. "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, supra.

Shoberg also suggests that demand for his publication is an important consideration. Declaration, statements 6-8. However, it has been held that merely showing that there was commercial success of an article, which embodied the invention, is not sufficient. *Ex parte Remark*, 15 USPQ2d 1498, 1502 (Bd. Pat. App. & Inter. 1990).

Lastly, Shoberg alleges commercial success from the invention. Declaration, statements 9-10. Shoberg states "Using the inventive audit method, my company has

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solved fastening problems for [a number of companies]" and "General Motors approached RST to train approximately 50 engineers to utilize RST software for bolted joint design and analysis which incorporate the audit method of the instant invention."

*Id.* An affidavit or declaration attributing commercial success to a product or process "constructed according to the disclosure and claims of [the] patent application" or other equivalent language does not establish a nexus between the claimed invention and the commercial success because there is no evidence that the product or process which has been sold corresponds to the claimed invention, or that whatever commercial success may have occurred is attributable to the product or process defined by the claims. *Ex parte Standish*, 10 USPQ2d 1454, 1458 (Bd. Pat. App. & Inter. 1988).

### ***Response to Arguments***

10. Applicant's arguments filed October 30, 2003, have been considered but are not found persuasive.

The declarations of Rice and Shoberg have been considered above, respectively only with respect to the obviousness rejections above. See MPEP § 716.01(a) (declarations must only be considered for determining issues of obviousness under 35 U.S.C. 103).

Applicant contends that the prior art of Rice et al does not disclose a method for auditing tension in a thread fastener. Applicant describes that audit process as follows:

The method includes applying a torque to a threaded fastener until a torque is reached to rotate the fastener. The torque applied to the fastener is measured as well as the angle through which the fastener rotated. These values are plotted against one another such that the torque values are plotted on a torque axis and

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the angle values are plotted on an angle axis. A tangent is extended from the plot at a point where the fastener began rotating towards the angle axis. The point at which the tangent line crosses the angle axis is defined to be zero degrees and the angle axis is then scaled based upon the known angle of rotation. The angle from zero degree point to the angle corresponding to the torque necessary to rotate the fastener is directly proportional to the tension or preload in the fastener.

Specification, [0012]. The Examiner previously showed that the prior art, esp. Rice disclosed the same steps. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, supra. "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, supra.

Applicant has not provided sufficient evidence to overcome the validity of the rejections above.

### **Conclusion**

11. This Continuation of Examination of applicant's earlier Application No. 09/825,416. All claims are drawn to the same invention claimed in the earlier action and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (703) 305-0240. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter B. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

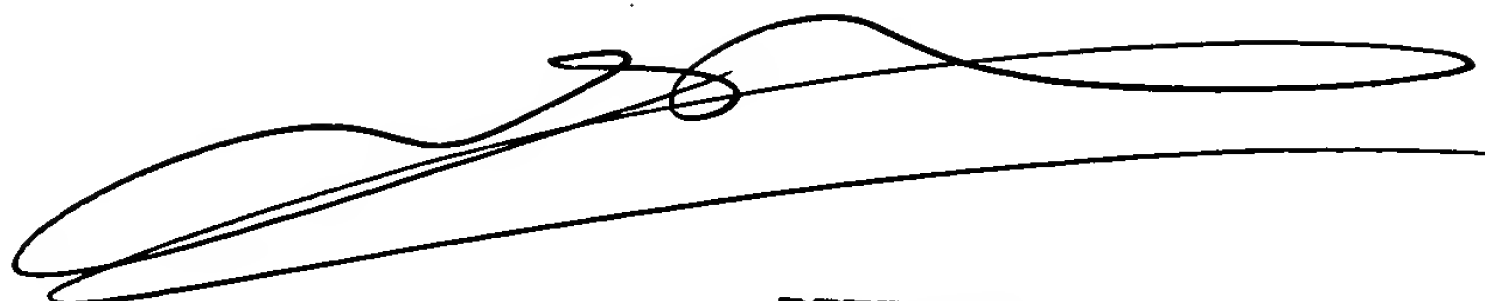
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

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Eric Compton  
Patent Examiner  
AU 3726

November 11, 2003



PETER VO  
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